University of Florida
Department of Geography
GEO 3162c / GEO 6938 (section 4700)

INTRODUCTION TO QUANTITATIVE METHODS

Fall 2005

Instructor: Dr. Timothy J. Fik, Associate Professor
Time: Tuesday (T): Periods 2-3 -- 8:30-10:25AM; and
Thursday (R): Period 3 -- 9:35-10:25AM
Location: TUR 3012; ***credit hours***: ***(4)*** undergraduates; ***(3)*** graduate students
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Prerequisites: None (although it is highly recommended that students complete an introductory statistics course prior to enrolling in this course)

Course Objectives

GEO 3162c/6938, "Introduction to Quantitative Methods", is designed to provide students with a working knowledge of various statistical techniques that are commonly used in social science research. Moreover, the course highlights various quantitative methods for spatial data analysis.

Lectures and reading assignments cover such topics as data measurement and presentation, descriptive statistics, probability distributions, samples and populations, hypothesis testing, and statistical inference. Introductory spatial statistics, correlation analysis, and bi-variate regression are topics that are also covered.

This course is designed to ensure that students gain a fundamental understanding of how to use quantitative methods before proceeding to study intermediate or advanced topics such as multivariate statistical modeling and analysis. Note: this course is the first in a sequence of three quantitative methods courses offered by our department. After completing "intro quant" students may choose to expand their knowledge of the subject by taking GEO 4167c/6938 -- Intermediate Quantitative Methods in the Spring.

Textbooks/Reading Material

Elementary Statistics for Geographers, J.E. Burt & G.M. Barber (1996, Guilford Press).

Course Evaluation

Your overall performance in the course will be determined by the total points earned out of a possible 250 points (see below), and 90% = A; 88-89% = B+; 80-87% = B;
78-79% = C+; 70-77% = C; 68-69% = D+; 60-67% = D; 0-59% = E.
No curve(s) will be applied to labs, exam grades, or final grades.

Component	points	
5 Take-Home Labs (20 points each)	100	(distribution and due dates TBA)
Mid-Term Examination (In-Class Exam)	50	(TBA)
Mid-Term Examination (Take-Home)	50	(TBA)
Comprehensive Final Examination	50	(TBA)

Course Policies

Late lab assignments or late take-home exams WILL NOT be accepted for any reason. *No exceptions*. Any lab or take-home exam that is "passed due" will be assigned a grade of zero (0/E). Labs and Take-home exams WILL NOT be accepted electronically or in digitial formats -- labs and take-home exams Will Not be accepted on floppy disks, mini (hard) disks, or CDs, nor will they be accepted via FAX, e-mail, or as an e-mail attachment).

Make-up exams WILL NOT be given for any reason. If you miss an exam you will receive a grade of zero (0/E) for that exam. Incompletes (i.e., course grades of "I") will not be given out for any reason. A final grade of A, B+, B, C+, C, D+, D, or E will be assigned to each student registering for this course.

There are no exceptions to the course policies highlighted above.

A Note on Collaboration

Collaboration between individuals or groups of students in a class such as this is unavoidable. Hence, let us work together to make this a positive experience.
I, therefore, encourage you to find a partner or group with whom you can cooperate and work productively. Working in small groups can be a valuable and rewarding experience (but be careful not to get stuck with someone who will take advantage of you or the group). Do not abuse this privilege and insult our intelligence by taking collaboration a step too far. Work together on the technical aspects of the problems (assigned in the labs/take-home assignments), but retreat to individual work when writing up the results and presenting discussions of those results. Evidence of cheating or excessive collaboration will result in a grade of 0 (E) for all parties concerned (for the lab or exam in question, and possibly for the course).

Required materials, notes, and misc.

As a requirement, each student must bring four sharpened #2 pencils, a pen, and a working calculator to each in-class exam. Lap-top computers may not be used during in-class exams. I'd suggest completing the in-class examinations in pencil (with final answers circled in ink, with all work shown) as it is common to go back and erase mistakes or miscalculations. Scratch paper will not be provided.

Note: In-class examinations are open-book / open-note format.

Note: Suggested computer software: ***NCSS 2000*** (provided by the department).

Note: You may use any statistics software package to assist you in this course if you do not wish to use NCSS (e.g., Minitab, SPSS, SAS, StatA, Systat, etc.).

Note: This is not a course on how to use computers or computer software. You must pick up these skills on your own time. This is a course in quantitative methods! The computer and software programs are tools that help us to carry out calculations.

Note: NCSS will also be used quite extensively for the multi-variate regression and diagnostic components of the Intermediate Quant course taught in the Spring. So, it would be a good idea to familiarize yourself with this package if you are considering taking GEO 4167/6938 as a follow-up to this introductory course.

Note: Be prepared to keep up during lecture. The lectures are designed to cover a fair amount of material over the course of the semester, and the pace will be fast and furious at times. **Photocopies of the instructor's lecture notes WILL NOT be available for any reason.** No exceptions. If you miss class, or fall behind, I recommend that you get a copy of the notes from one of your peers; and this is one of the reasons why I highly recommend working in a group setting.

Note: Copies of this syllabus are accessible on-line only, in an attempt to save on paper and due to limit resources and tight photocopying budgets. It is highly recommended that you go to the Geography Department's Web-site, and click on "Course Syllabus" and find the syllabus for this course. Carefully read the syllabus before e-mailing the instructor with questions. The syllabus will be available on-line throughout the entire semester. It is your responsibility to read the syllabus and understand course policies. Continuing on is this course means that you have tacitly agreed to the policies outlined within this syllabus.

Note: If you have a problem with policies, material, instructor, or the pace at which material is presented during the lectures, by all means… feel free to drop the course.

List of Topics (tentative):

Terminology and Notation: Statistics & Quantitative Methods
Scientific Method: Deductive Approach versus Inductive Approach
Data and Levels of Data Measurement
Classification Methods
Samples, Populations, and Sampling
Classic Descriptive Statistics
Descriptive Statistics for Spatial Distributions
Graphical Tools and Techniques
Introduction to Probability Theory
Selected Theoretical Probability Distributions
Statistical Inference
Sample Size Determination
Simple and Complex Hypothesis Testing
Confidence Intervals
Equality of Means
Analysis of Variance (ANOVA)
Goodness-of-fit Testing
Correlation and Statistical Association
Parametric and Non-parametric Methods
Bi-variate Regression
Introduction to Spatial Auto-Correlation/Join-Count Statistics (optional)
Point-Pattern Analysis & Quadrat Analysis
Nearest-Neighbor Statistics
Directional Statistics (optional)
Measures of Inequality and Concentration (optional)

Tentative Reading Assignments/Schedule:

Weeks 1-3: Chapters 1, 2, 3, and 5 (Burt & Barber)
4-5: Chapters 6 and 7 (Burt & Barber)
6-10: Chapters 8, 9, and 10 (Burt & Barber)
11-15: Chapters 11, 12, and 13 (Burt & Barber)

Note: Students are responsible for all assigned material covered in the lecture and the readings. Supplemental reading materials, labs, etc. will be distributed periodically (typically at the start of lecture). It is your responsibility to acquire and assimilate these materials. Furthermore, it is your responsibility to obtain copies of all handouts... including take-home labs and exam(s). While class roll will not be called (formally), it is highly recommended that you attend class on a regular basis so you do not fall behind in your studies… and as a way to keep up with assignments, handouts, news and scheduling changes, important dates, etc. Nevertheless, attendance sheets will be circulated (from time to time) to find out who is attending class.